IN THE CLAIMS

1. (Original) An RF semiconductor device comprising:

a high resistivity polysilicon handle wafer;

a buried oxide layer over the polysilicon handle wafer; and,

a silicon layer over the buried oxide layer.

2. (Original) The RF semiconductor device of claim 2 further comprising an RF input.

3. (Original) An RF semiconductor device comprising:

a high resistivity polycrystalline layer;

a buried oxide layer over the polycrystalline layer; and,

a silicon layer over the buried oxide layer.

4. (Original) The RF semiconductor device of claim 3 wherein the polycrystalline layer comprises a polysilicon layer.

5. (Original) The RF semiconductor device of claim 3 further comprising an RF input.

6. (Original) The RF semiconductor device of claim 5 wherein the polycrystalline layer comprises a polysilicon layer.

7-21 (canceled)

22. (Withdrawn) A method of fabricating an RF semiconductor device starting with a SOI wafer having a top silicon layer, a buried oxide layer, and a bottom silicon layer, the method comprising:

forming a new oxide layer on a surface of the top silicon layer;

forming a high resistivity polysilicon layer over the new oxide layer;

removing the bottom silicon layer of the SOI wafer; and,

removing the buried oxide layer of the SOI wafer so as to produce the RF semiconductor device.

23. (Withdrawn) The method of claim 22 wherein the forming of a polysilicon layer over the new oxide layer comprises depositing a polysilicon layer on the new oxide layer.

24. (Withdrawn) The method of claim 23 wherein the removing of the bottom silicon layer of the SOI wafer comprises grinding and/or etching away the bottom silicon layer of the SOI wafer.

25. (Withdrawn) The method of claim 23 wherein the removing of the buried oxide layer of the SOI wafer comprises grinding and/or etching away the buried oxide layer of the SOI wafer.

26. (Withdrawn) The method of claim 25 wherein the removing of the bottom silicon layer of the SOI wafer comprises grinding and/or etching away the bottom silicon layer of the SOI wafer.

27. (Withdrawn) The method of claim 22 wherein the removing of the bottom silicon layer of the SOI wafer comprises grinding and/or etching away the bottom silicon layer of the SOI wafer.

28. (Withdrawn) The method of claim 22 wherein the removing of the buried oxide layer of the SOI wafer comprises grinding and/or etching away the buried oxide layer of the SOI wafer.

29. (Withdrawn) The method of claim 28 wherein the removing of the bottom silicon layer of the SOI wafer comprises grinding and/or etching away the bottom silicon layer of the SOI wafer.

30. (Withdrawn) The method of claim 22 further comprising processing the silicon remaining from the SOI wafer so as to form an integrated circuit of the RF semiconductor device therein.

31. (Withdrawn) The method of claim 22 further comprising processing the silicon remaining from the SOI wafer so as to form transistors and inductors.

32. (new) The RF semiconductor device of claim 1 wherein the high resistivity polysilicon handle wafer comprises a high resistivity polysilicon handle wafer having a resistivity ρ greater than 10^6 Ω-cm.

33. (new) The RF semiconductor device of claim 1 wherein the silicon layer comprises an RF processed silicon layer.

34. (new) The RF semiconductor device of claim 3 wherein the high resistivity polycrystalline handle wafer comprises a high resistivity polycrystalline handle wafer having a resistivity ρ greater than 10^6 Ω-cm.

35. (new) The RF semiconductor device of claim 3 wherein the silicon layer comprises an RF processed silicon layer.